

National TRU Waste Management Plan

Quarterly Supplement
for 3rd Quarter FY2001

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Introduction

The U.S. Department of Energy (DOE) is committed to honoring the federal government's obligation to clean up "legacy" waste at sites across the nation that supported nuclear research and development, and the production and testing of nuclear weapons. It is the objective of DOE Order 435.1, "Radioactive Waste Management," to ensure that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety, and the environment. Per this Order, DOE is responsible for developing, implementing, and maintaining integrated complex-wide radioactive waste management program plans. At the DOE complex-wide level, each plan describes the functional elements, organizations, responsibilities, and activities that comprise the system needed to store, treat, and dispose of waste. In addition, the DOE is responsible for establishing and maintaining a system to compile waste generation projection data and other information concerning waste management facilities, operations, and activities. The issuance of the National Transuranic (TRU) Waste Management Plan (NTWMP), Revision 2, dated December 2000 fulfilled this obligation.

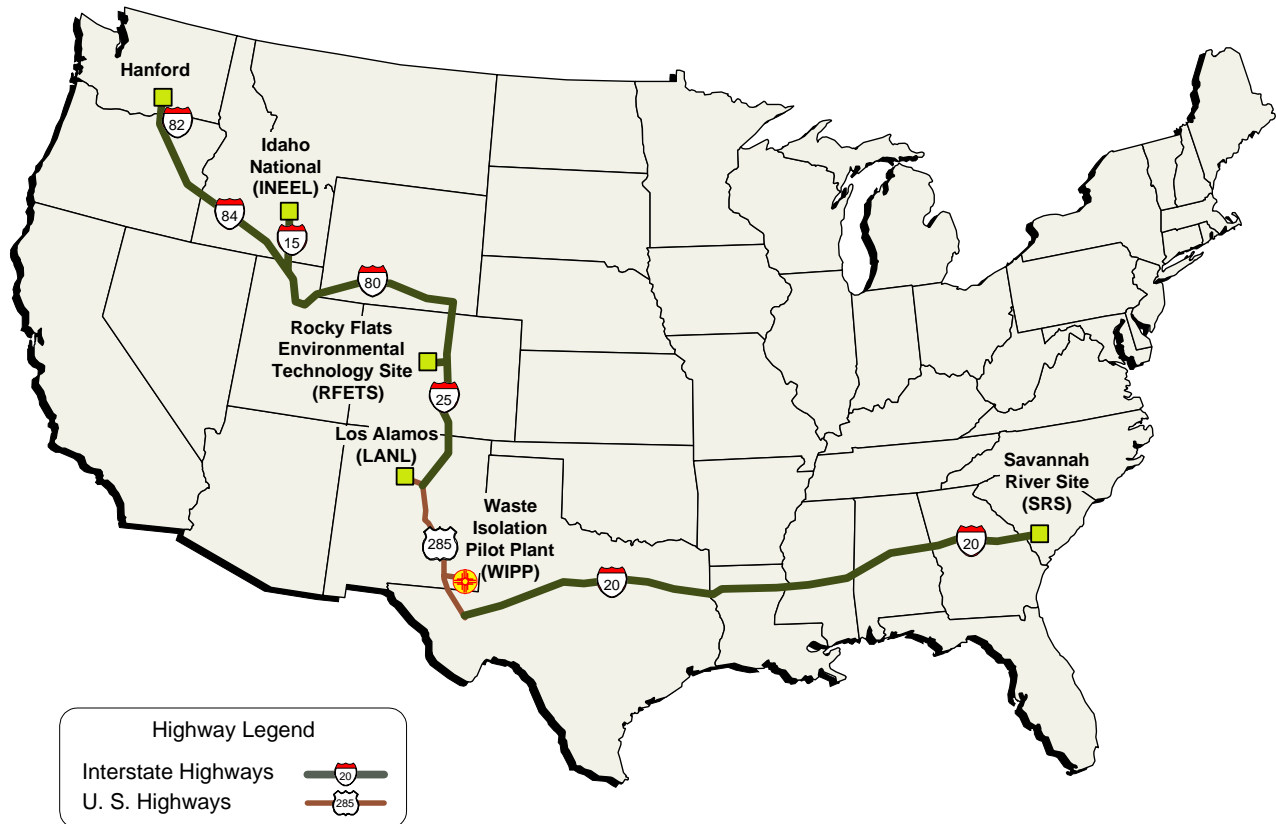
This Quarterly Supplement for the Third Quarter of Fiscal Year 2001 (April - June 2001) documents site and system-wide performance as of June 30, 2001 through Key Performance Indicators (KPIs) developed in the NTWMP. These KPIs are sets of tailored metrics that are used to report current status, monitor the effects of changes, determine progress, and provide feedback for continuous system improvement. The DOE uses the KPIs to measure the progress and success of the many activities within the national TRU system that contribute toward the ultimate goal of TRU waste cleanup and disposal. The Quarterly Supplements are issued every three months and document TRU Waste System performance during the past quarter and forecast the next quarter's activities compared to these KPIs.

In this Quarterly Supplement, two KPIs, the number of shipments made on a monthly basis and the monthly volume of waste received, are tracked. These are shown as plots of actual performance against the baseline schedules provided for inclusion in the NTWMP by each site's TRU program and TRU waste managers. These KPIs reflect the periodic updates or three month forecasts made to these schedules on a quarterly basis. For the annual update of the NTWMP, two additional KPIs, one on site waste characterization costs and one on the cycle time to perform audits, will be added to the two KPIs currently tracked in the Quarterly Supplements.

The Quarterly Supplement also evaluates the impacts of system schedule changes based on discussions and negotiations with the TRU waste sites during the preparation of the NTWMP. The NTWMP is then revised annually to reflect the new schedules provided by each site's TRU program and TRU waste managers. Updated KPIs are developed based on the schedules. Variances from the previous year's schedules that have an impact on out-year system capabilities are addressed in the NTWMP.

Table of Contents

Introduction	1
Key Performance Indicators	3
Hanford	4
INEEL	6
LANL	8
RFETS	10
SRS	12
Transportation	14
Disposal	15
TRU Waste System	16
Technical and Programmatic Issues ..	19
Optimization	21



KPIs are also used by the National Transuranic Waste Complex Corporate Board (the Board) to measure and monitor performance. The Board was developed to provide consensus, strategic, tactical, and programmatic recommendations, and facilitate the integration and business-like operation of the National TRU Waste Program. Membership consists of senior DOE and contractor representatives from those sites that are actively shipping waste to the WIPP. The vision is to achieve an end-state of cost effectiveness and safety by using best managements business practices, such as standardization, economies of scale at the national level, operational efficiencies (e.g., modular/mobile systems), and national authorization basis requirements for the operational safety of the modular/mobile systems (i.e., documentation transferable from site to site). KPIs used by the Board include the four KPIs described previously for the NTWMP and Quarterly Supplement plus KPIs for TRUPACT-II utilization and the resolution of corrective action reports and non-conformance reports resulting from the audit process.

The above figure shows the corridors (or routes) over which the waste is currently transported to WIPP. These corridors were "opened" prior to the sites being allowed to ship. The opening of the shipping corridor includes informing the general public and the elected officials of the associated risk and effectively responding to their concerns. State and tribal governments require emergency preparedness training, training exercises, and hospital-based training to ensure that any accident that may occur can be managed locally.

A corridor is considered open when, prior to the announced generator site shipping date, requests for training and exercises have been completed to the satisfaction of the state or tribal government. Corridors from the Hanford Site, the Idaho National Engineering and Environmental Laboratory, the Rocky Flats Environmental Technology Site, the Los Alamos National Laboratory, and the Savannah River Site to WIPP are open.

Key Performance Indicators

This Quarterly Supplement documents site and system-wide performance through Key Performance Indicators (KPIs) developed in the NTWMP. Performance measurement is mandated by the Government Performance and Results Act of 1993. In addition, DOE Order 435.1, *"Radioactive Waste Management,"* requires that the goals of all DOE waste management programs be measurable to support periodic assessment of the program's progress. Therefore, the KPIs developed and tracked within the DOE TRU waste system support specific program completion or site closure dates, such as those listed in the Status Report on *Paths to Closure* (DOE/EM-0526, March 2000).

To provide this measurement capability, the DOE uses Performance Indicators (PIs). In general, the DOE derives benefits from the PIs such as:

- Accountability for Federal employees and contractors regarding stewardship of monetary resources by showing progress toward national goals.
- Validation of programs and their costs. In an era of shrinking federal budgets, demonstration of good performance and sustainable public impacts with positive results help validate programs and their costs.
- Trending to determine the need to implement contingency planning. Management of products and services can be improved by analyzing trends and focusing resources.
- Improving communications. Collecting and processing accurate information for PIs facilitates communications regarding mission-critical activities.

Within the DOE TRU waste system, specific KPIs serve four basic functions:

- Provide measurable results so the National TRU Program can demonstrate progress towards goals and objectives. The progress of individual elements is demonstrated by providing specific measurement results that aggregate to system-wide measures.
- Determine the effectiveness of each element of the program. KPIs show how well each element is meeting its goals and objectives.
- Characterize the performance of the DOE TRU waste system. Impacts caused by a variance from an individual site's planned schedule can be assessed.
- Allow assessment of program successes so that resources can be reallocated to projects where they have the most positive impact to system performance.

Each site that has activity planned in FY 2001 has KPIs presented on:

- Volume shipped (Actual versus Annual Planned) (cumulative).
- Number of shipments (Actual versus Annual Planned) (cumulative).

In addition to the Actual Volume and Shipments, and the Planned Volume and Shipments presented for each site, forecast values for volumes and shipments are updated quarterly to show current planning. These Forecast values are depicted on the figures for each site along with the Actual and Planned values.

Hanford Reservation

Background

The first shipment from the Hanford Reservation (Hanford) was made on July 12, 2000 and was received at WIPP on July 14, 2000. Through June 30, 2001, a total of 7 shipments from Hanford representing 54.0 m³ have been received.

Third Quarter Performance

During the third quarter of FY01, one shipment with a volume of 8.82 m³ was made and disposed. The projection for this period was one shipment with a volume of 6.8 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, Hanford has made 4 shipments with a total volume of 35.3 m³. In

comparison to initial planning for FY01, Hanford had planned to make 4 shipments consisting of 27.2 m³ during this same time period.

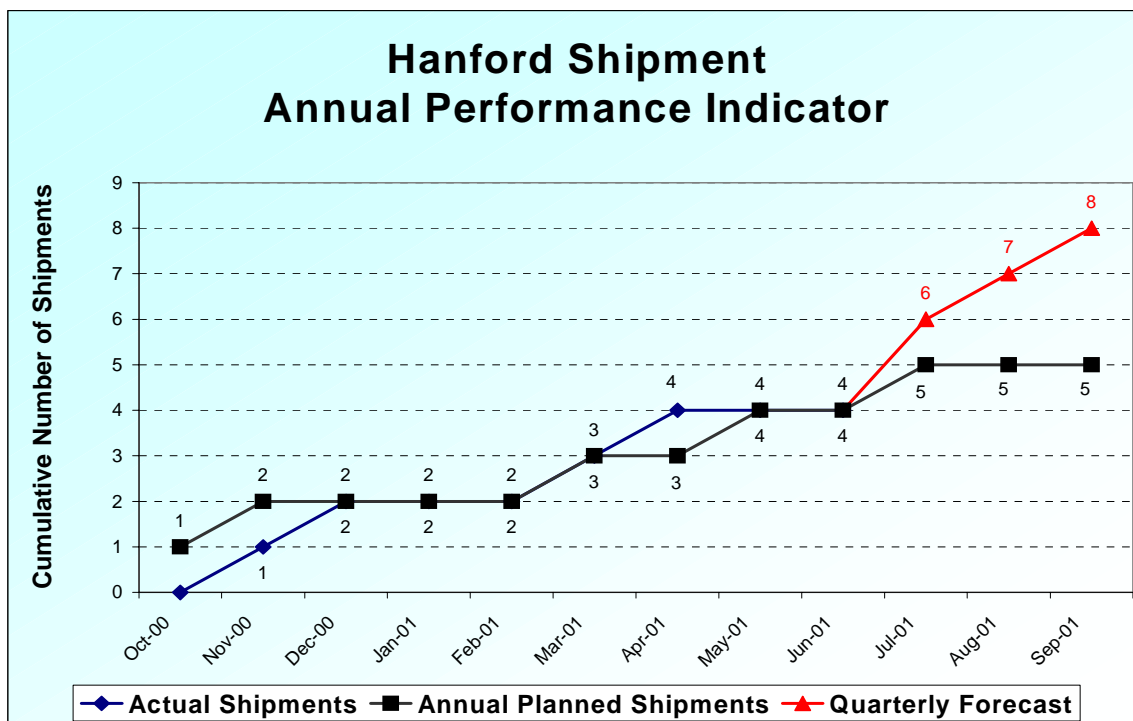
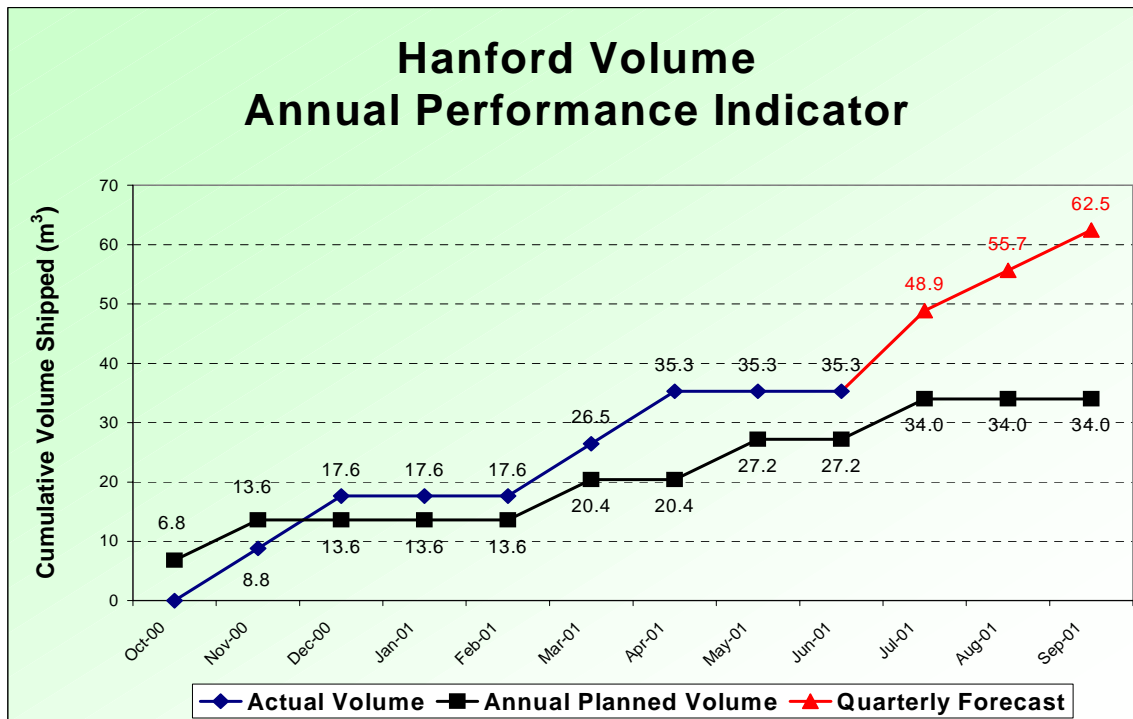
Current Fiscal Year Forecast

Hanford has already exceeded their initial waste volume projection and needs only one shipment to reach the original shipment projection. The one additional projected shipment is estimated to be 6.8 m³. The current forecast is to make 4 more shipments during FY01 with an additional waste volume of 27.2 m³.

Key Performance Indicators

The Key Performance Indicators are graphically shown in the following figures:

- Hanford Volume Annual Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red.
- Hanford Shipment Annual Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red.



Idaho National Engineering and Environmental Laboratory

Background

The first shipment from the Idaho National Engineering and Environmental Laboratory (INEEL) was made on April 27, 1999 and was received at WIPP on April 28, 1999. Through June 30, 2001, a total of 94 shipments from INEEL representing 577.5 m³ have been received.

Third Quarter Performance

During the third quarter of FY01, 40 shipments with a volume of 226.2 m³ were made. Of this 40 shipments, 38 were disposed for a disposal volume of 221.1 m³. One shipment with a waste volume of 5.88 m³ was received in March and disposed of in April. As described later, two shipments (10.9 m³) were received at WIPP and are pending an EPA determination prior to disposal. The projections for this period were 51 shipments with a volume of 347.8 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, INEEL has made 78 shipments consisting of 455.5 m³. In comparison to initial planning for FY01, INEEL had planned to make 116 shipments consisting of 791.1 m³ during this same time period.

Current Fiscal Year Forecast

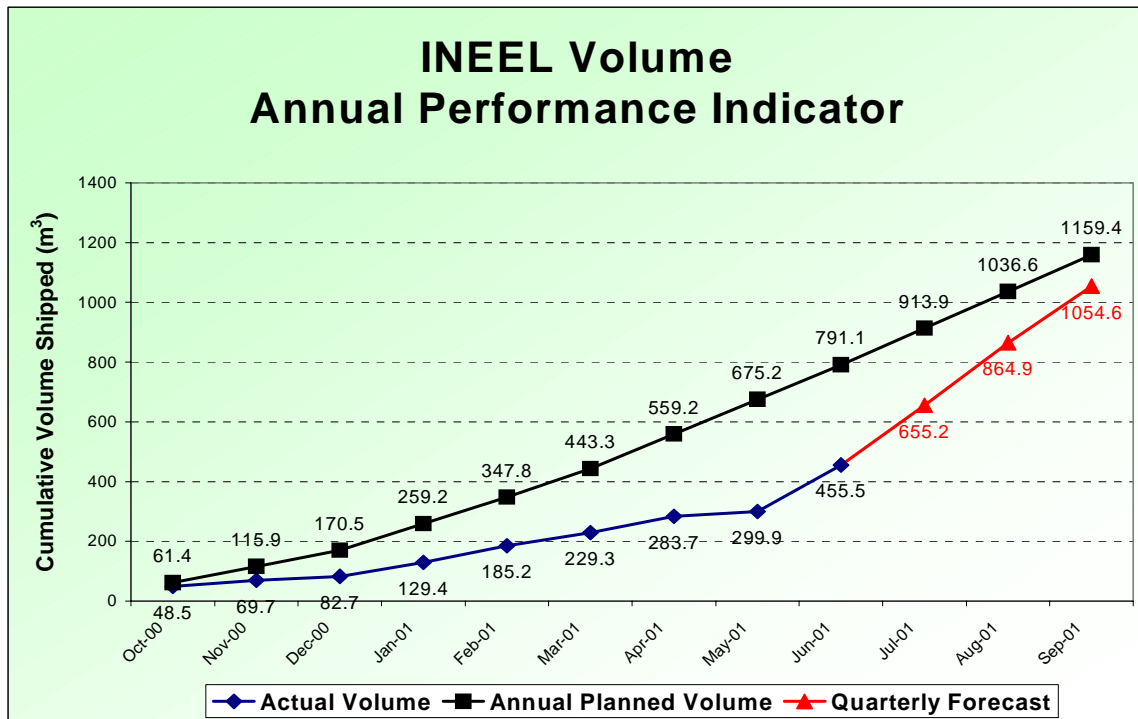
During the remainder of FY01, INEEL will need to make 92 more shipments with an anticipated waste volume of 703.9 m³ to meet their original shipment and volume plans. The original projections indicated plans for 54 shipments with a total volume of 368.3 m³ during this period. The current shipment forecast is for 40 in July 2001, 42 in August 2001, and 38 in September 2001. The associated volume forecasts are 199.7 m³, 209.7 m³, and 189.7 m³, respectively, with a total volume of 599.1 m³ for the last three months of FY01.

During the last part of June, it was discovered that some INEEL waste had been characterized using equipment and procedures not on the audit list of approved equipment and procedures for INEEL. On June 27, 2001, the U.S. Environmental Protection Agency (EPA) instructed the CBFO to suspend all waste shipments from INEEL, and to suspend emplacement of INEEL waste in the WIPP. This suspension was to remain in effect until EPA could conduct a preliminary inspection of new equipment used at INEEL for the certification of INEEL waste and complete the process for adding it to the list of approved equipment and procedures. On July 9, 2001, the EPA issued a preliminary determination that allowed the continued disposal of INEEL waste characterized by approved equipment and procedures. However, waste characterized by the unapproved procedures and equipment could not be shipped to WIPP or disposed of at the WIPP. The EPA agreed to allow the receipt and surface storage of these wastes if the waste had already been received or was in transit to WIPP when the suspension was issued. Five shipments made by INEEL in June (two received at WIPP in June and three in July) are therefore stored on the surface at WIPP pending the EPA determination. The earliest projected approval date for the new equipment and procedures is mid-August.

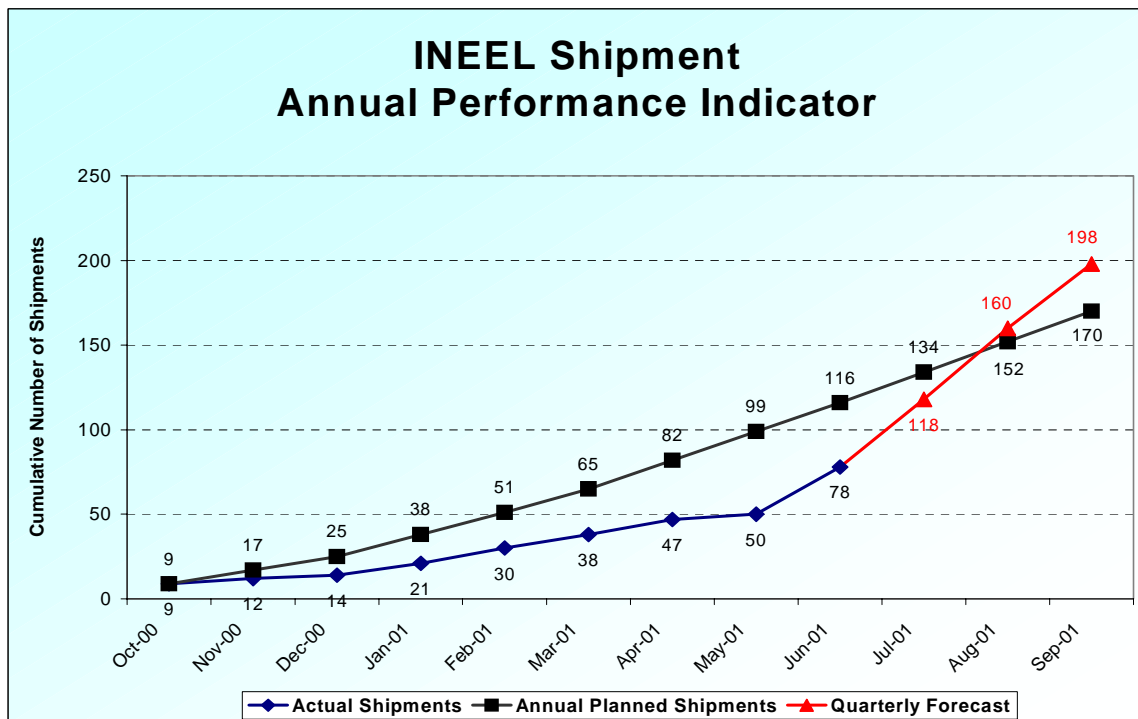
Key Performance Indicators

These Key Performance Indicators are graphically shown in the following figures:

- INEEL Volume Annual Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red.
- INEEL Shipment Annual Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red.



Note: As described in the text, five INEEL shipments are included in the received volumes, but are not currently disposed.



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Los Alamos National Laboratory

Background

The first shipment from the Los Alamos National Laboratory (LANL) was made on March 25, 1999 and was received at WIPP on March 26, 1999. Through June 30, 2001, a total of 22 shipments from LANL representing 242.5 m³ have been received.

Third Quarter Performance

During the third quarter of FY01, five shipments with a total volume of 52.6 m³ were made and disposed. The projection for this period was 6 shipments with a total volume of 51.8 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, LANL had five shipments with a total volume of 52.6 m³. The required approval of the LANL Certification Audit Report by the New Mexico Environment Department was not received as early as expected. In accordance with the requirements of the WIPP Hazardous Waste Facility Permit, each site's certification program must be audited and the audit report approved prior to the initiation of shipments from that site.

In comparison to original projections for FY01, LANL had planned to make 13 shipments consisting of 112.2 m³ during this same time period.

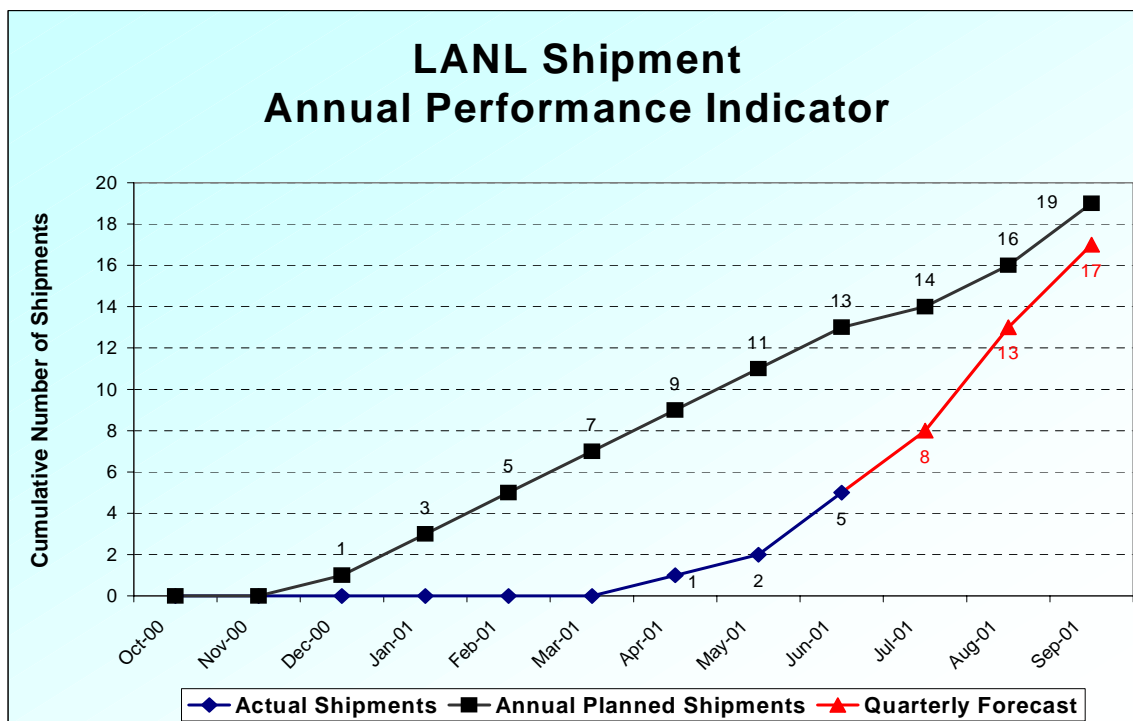
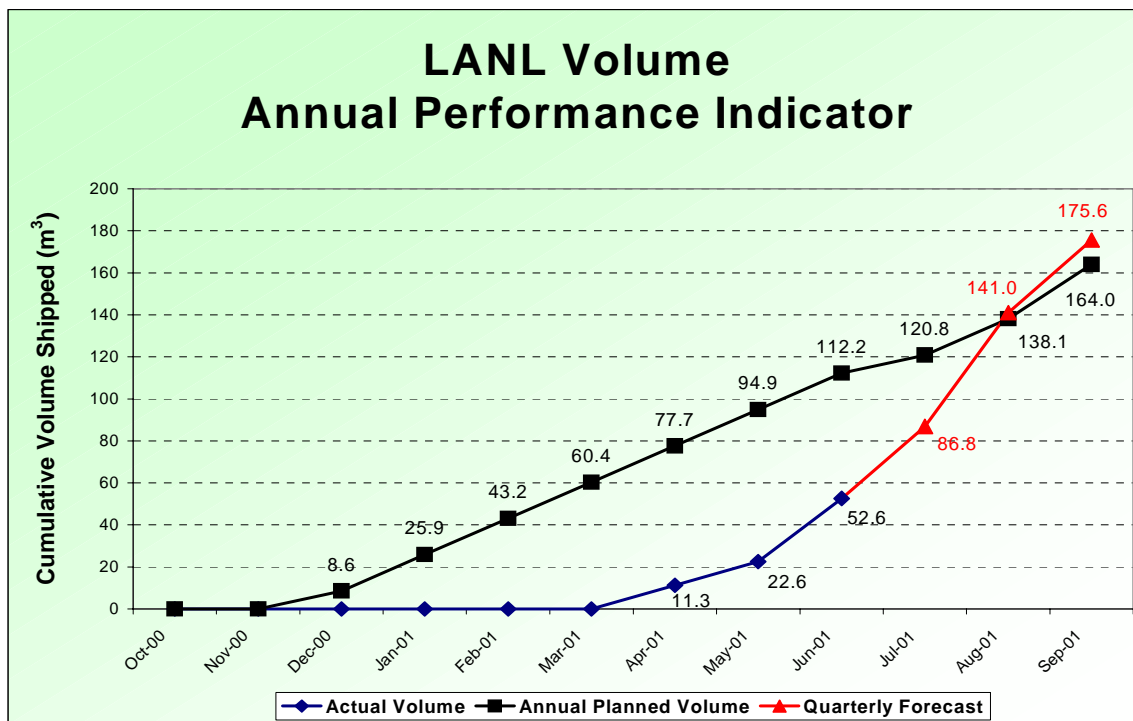
Current Fiscal Year Forecast

During the remainder of FY01, LANL will need to make 14 more shipments with an anticipated waste volume of 111.3 m³ to meet their original shipment and volume plans. The original projections show 6 shipments with a total projected volume of 51.8 m³ for this three month period. The current forecast is to make 12 shipments with a total volume of 123.0 m³.

Key Performance Indicators

These Key Performance Indicators are graphically shown in the following figures:

- LANL Volume Annual Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red.
- LANL Shipment Annual Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red.



Rocky Flats Environmental Technology Site

Background

The first shipment from the Rocky Flats Environmental Technology Site (RFETS) was made on June 15, 1999 and was received at WIPP on June 17, 1999. Through June 30, 2001, a total of 156 shipments from RFETS representing 1013.0 m³ have been received.

Third Quarter Performance

During the third quarter of FY01, 45 shipments with a total volume of 262.5 m³ were made and disposed. The projection for this period was 56 shipments with a total volume of 370.7 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, RFETS has shipped 102 shipments consisting of 699.1 m³. In comparison to initial planning for FY01, RFETS had planned to make

115 shipments consisting of 761.3 m³ during this same time period.

Current Fiscal Year Forecast

During the remainder of FY01, RFETS will need to make 73 more shipments with an anticipated waste volume of 459.4 m³ to meet their original shipment and volume plans. The original projections show 60 shipments with a total projected volume of 397.2 m³ for this three month period. The current forecast is to make 60 shipments with a total volume of 352.8 m³.

During the third quarter of FY01, RFETS experienced failure of the crane used for TRUPACT-II loading. The period of time required to repair the crane led to the cancellation of three shipments during the last week of June.

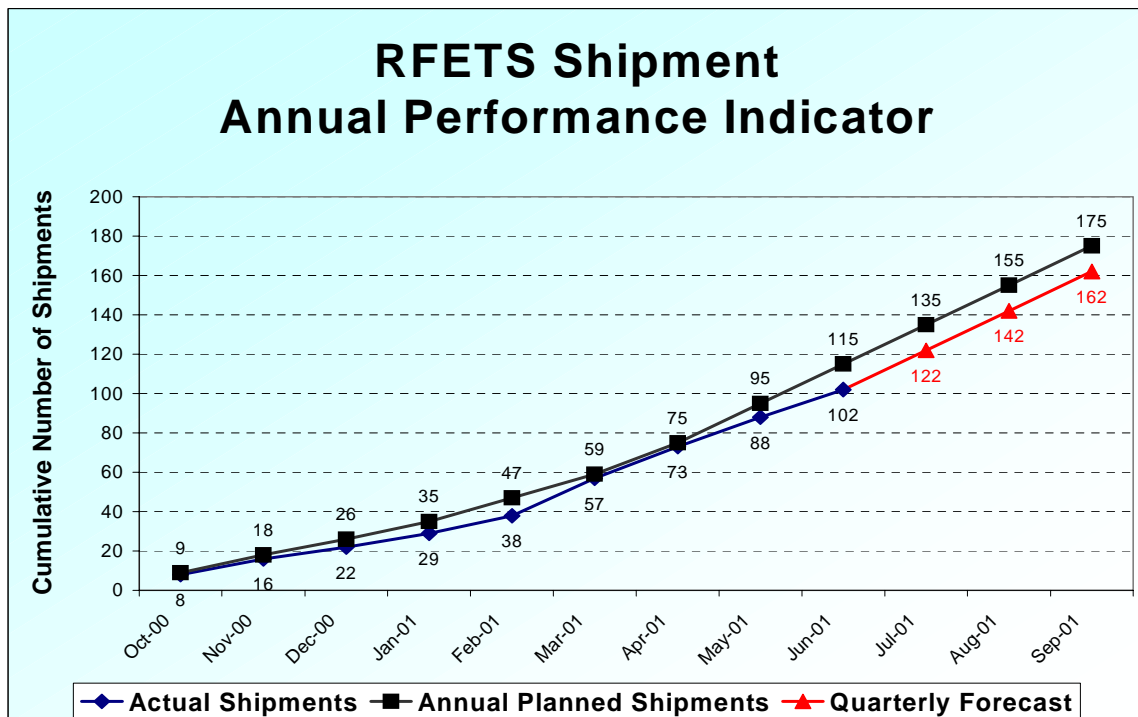
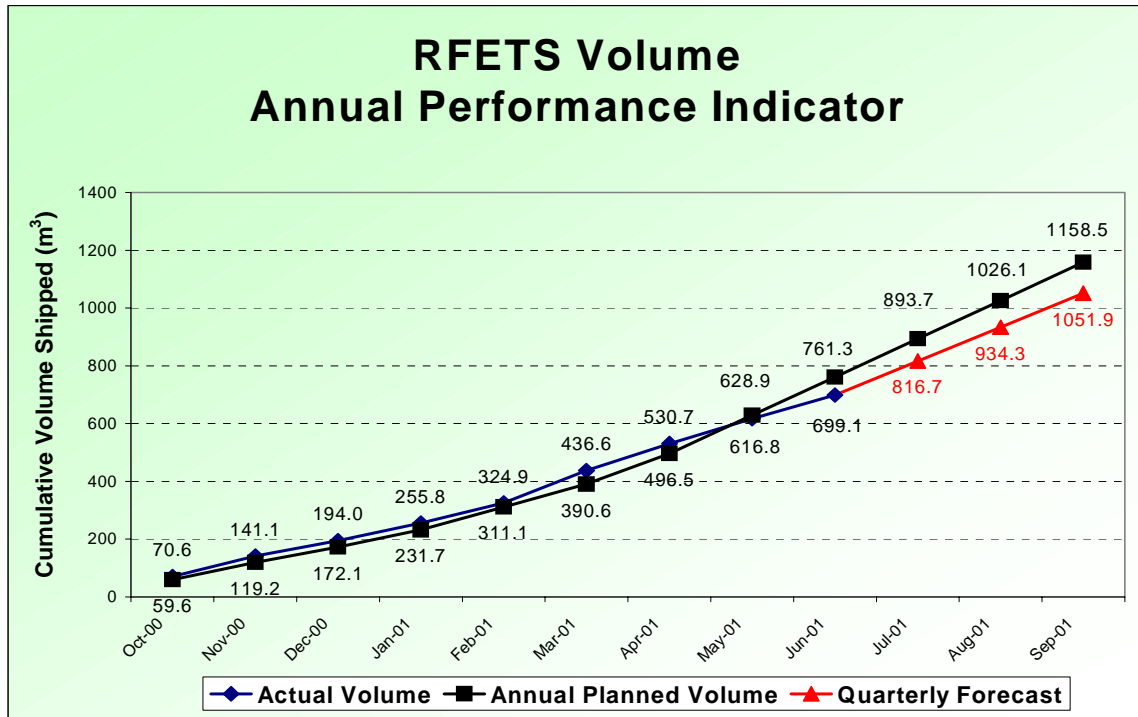
Key Performance Indicators

These Key Performance Indicators are graphically shown in the following figures:

- RFETS Volume Annual Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red.
- RFETS Shipment Annual Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red.



Rocky Flats



Savannah River Site

Background

The first shipment from the Savannah River Site (SRS) was made on May 8, 2001 and received on May 10, 2001. As of June 30, 2001, one shipment of 8.82 m³ has been shipped and disposed.

Third Quarter Performance

During the third quarter of FY01, one shipment with a volume of 8.82 m³ was made and disposed. The projection for this period was 9 shipments with a total volume of 78.7 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, SRS has made one shipment with a volume of 8.82 m³. The required

approval of the SRS Certification Audit Report by the New Mexico Environment Department (NMED) was not received as early as expected. In accordance with the requirements of the WIPP Hazardous Waste Facility Permit, each site's certification program must be audited and the audit report approved prior to the initiation of shipments from that site.

Delays are also being experienced in the audit and inspection of the characterization and certification activities of the Central Characterization Project (CCP). The CCP is supplementing SRS capabilities for waste characterization and certification. NMED and EPA approvals of CCP activities are anticipated during the next quarter.

In comparison to initial projections for FY01, SRS was projected to make 10 shipments consisting of 87.4 m³ during this same time period.

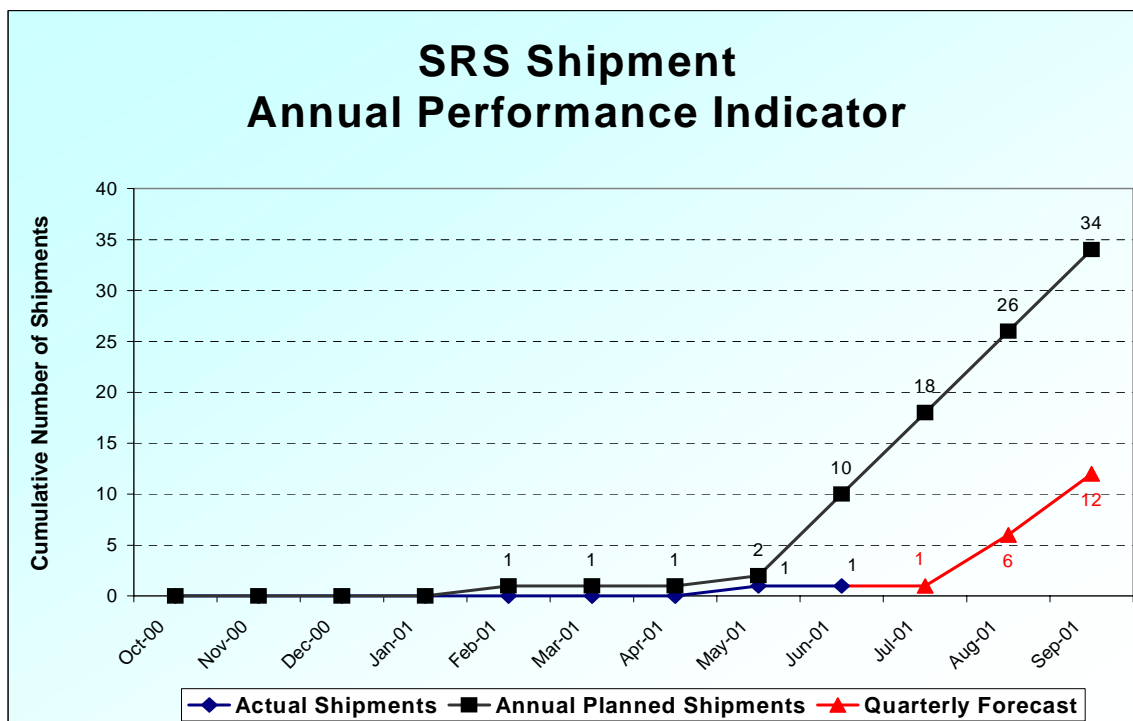
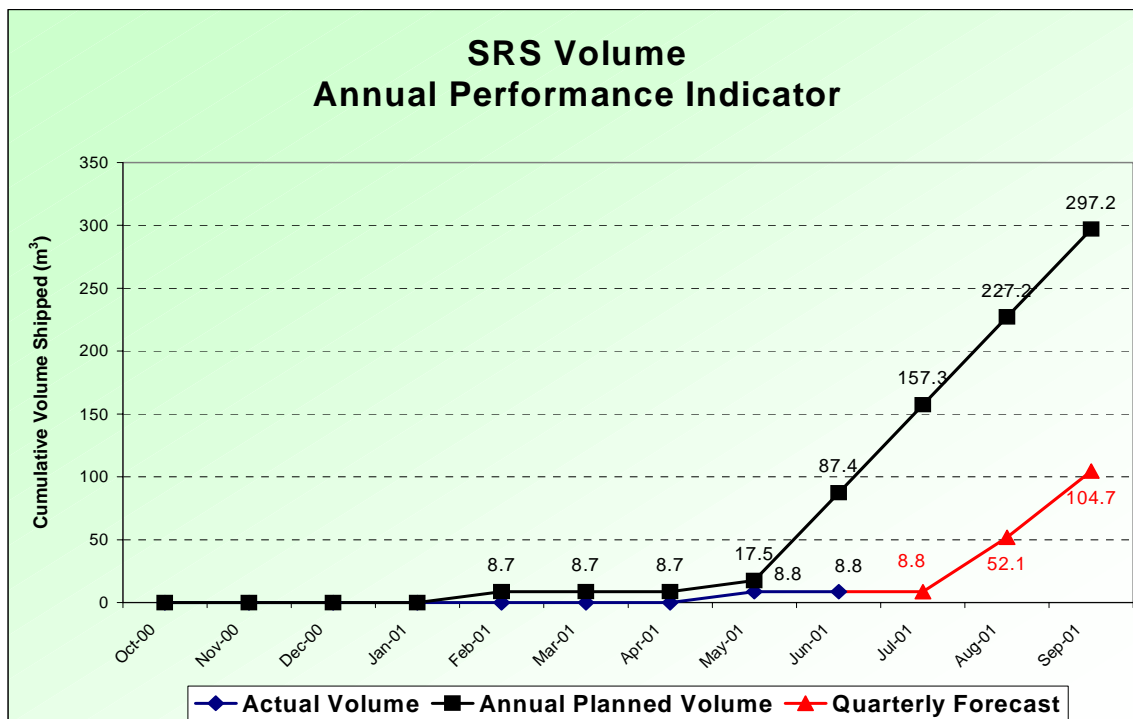
Current Fiscal Year Forecast

During the remainder of FY01, SRS will need to make 33 more shipments with an anticipated waste volume of 288.4 m³ to meet their original shipment and volume plans. The original projections show 24 shipments with a total projected volume of 209.8 m³ for this three month period. The current forecast is to make 11 shipments with a total volume of 95.9 m³. Seven of these shipments will be prepared by SRS while the remaining four shipments will be prepared under the Central Characterization Project.

Key Performance Indicators

These Key Performance Indicators are graphically shown in the following figures:

- SRS Volume Annual Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red.
- SRS Shipment Annual Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red.



Transportation

Background

The Performance Indicator for Transportation is the average annual downtime calculated as a monthly running average. From the contract, "Downtime" is defined as:

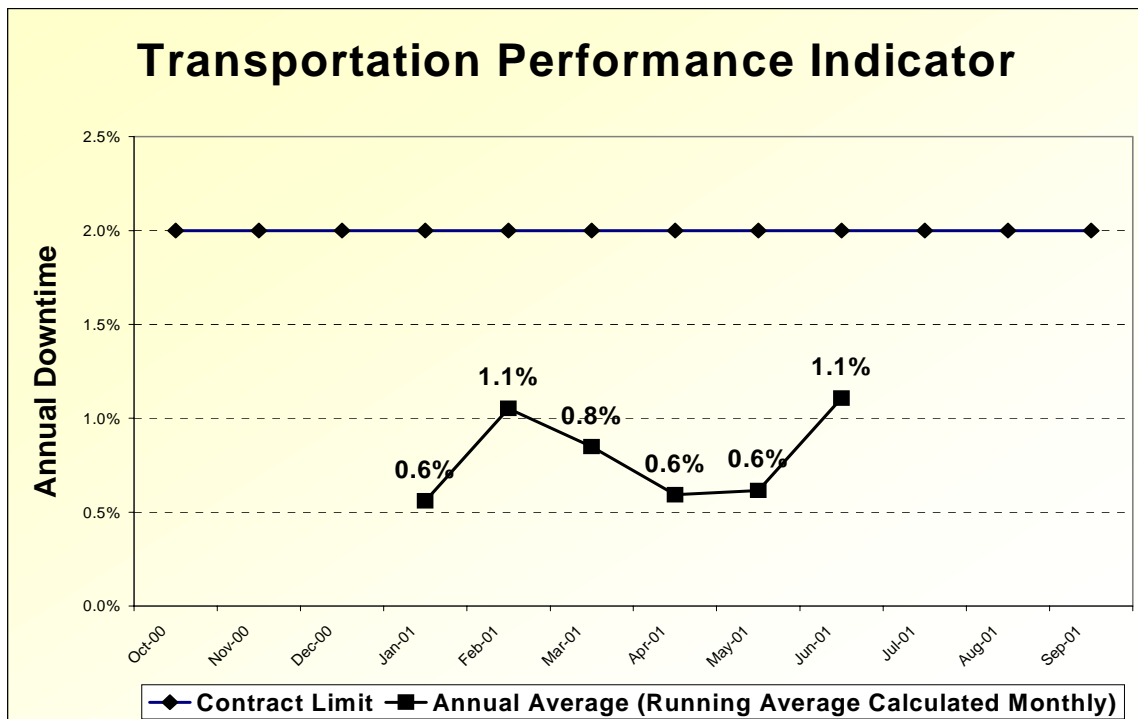
"The cumulative amount of time that a truck set is not available versus the time that it is in a safe operating mode, expressed as a percentage.

Scheduled preventative maintenance and generator site or WIPP site delays are not included in this calculation."

Weather delays are not included in the downtime calculations.

For comparison purposes, the contract limit is 2.0%. Few downtime hours have been accrued at this time with the largest number (51 hours) occurring during June. The June total resulted from two occurrences; replacement of a broken trailer spring (26 hours) and replacement of a driver (25 hours).

The calculated downtime is shown graphically on the figure. Due to ongoing contract changes during the first three months of FY01, data for October, November, and December are not presented.



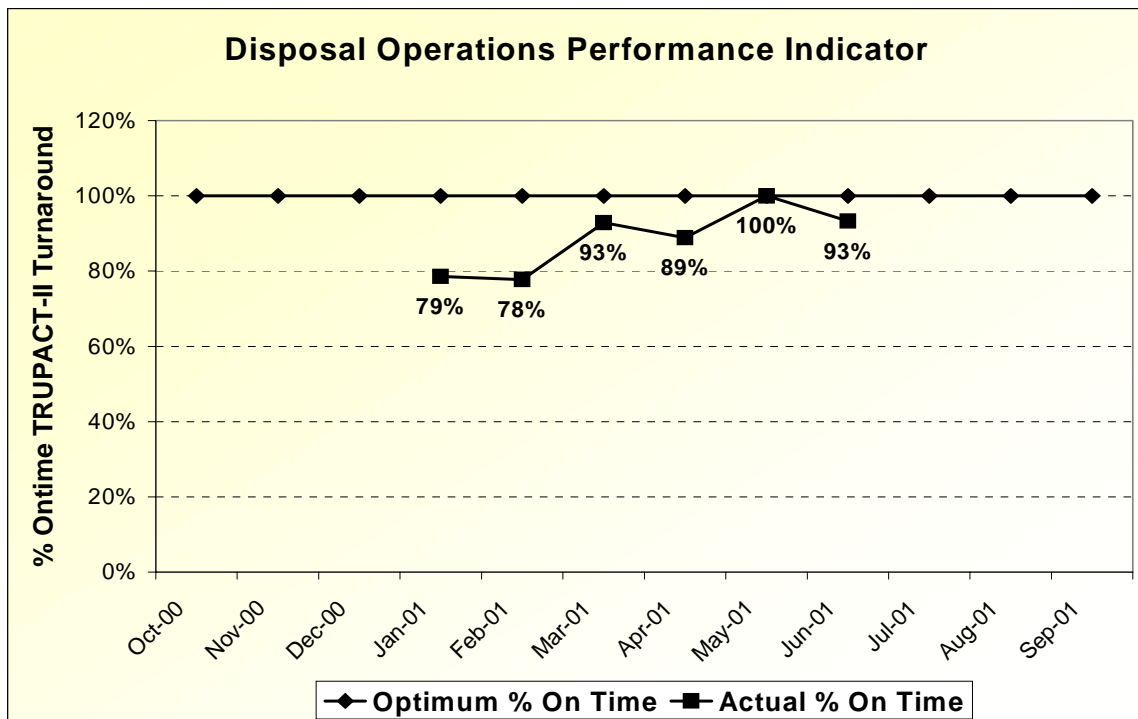
Disposal

Background

The Performance Indicator for Disposal Operations tracks on-time TRUPACT-II turnaround. This Performance Indicator shows whether disposal operations are able to turn around packaging to maintain the shipping schedule. Failure to meet a scheduled shipping date and time is counted against turnaround performance.

Due to the limited receipt schedule, the current turnaround times have fully satisfied TRU waste site shipping needs.

The percentage of on-time TRUPACT-II turnaround is shown graphically on the figure. Due to ongoing contract changes during the first three months of FY01, data for October, November, and December are not presented.



TRU Waste System

Background

Through June 30, 2001, a total of 280 shipments representing 1895.9 m³ of TRU waste have been received.

Third Quarter Performance

During the third quarter of FY01, 92 shipments with a total volume of 559.0 m³ were made and disposed. The projection for this period was 123 shipments with a total volume of 855.8 m³.

Current Fiscal Year

As of June 30, 2001, during FY01, 190 shipments consisting of 1251.3 m³ have been received. In comparison to initial planning for FY01, 258 shipments consisting of 1779.2 m³ were anticipated during this same time period.

Current Fiscal Year Forecast

During the remainder of FY01, the TRU Waste System needs 213 more shipments with an anticipated waste volume of 1561.7 m³ to meet the original shipment and volume plans. Original projections for the TRU Waste System show 145 shipments with an anticipated waste volume of 1033.8 m³ to meet the initial NTWMP shipment and volume plans. The current forecast is to make 207 shipments with a total volume of 1198.0 m³.

Another factor affecting shipping plans is the availability of TRUPACT-II shipping containers. Based on the current schedule for TRUPACT-II availability and the forecast shipping needs from the TRU waste sites, shipments during the remainder of FY01 could be limited to less than the current forecast.

Key Performance Indicators

These Key Performance Indicators are graphically shown in the following figures:

- TRU Waste System Actual Volume Performance Indicator - the actual volume shipped versus the planned volume to be shipped during FY01. The next quarter forecast is shown in red. Estimates of restrictions due to TRUPACT-II availability are

shown in blue.

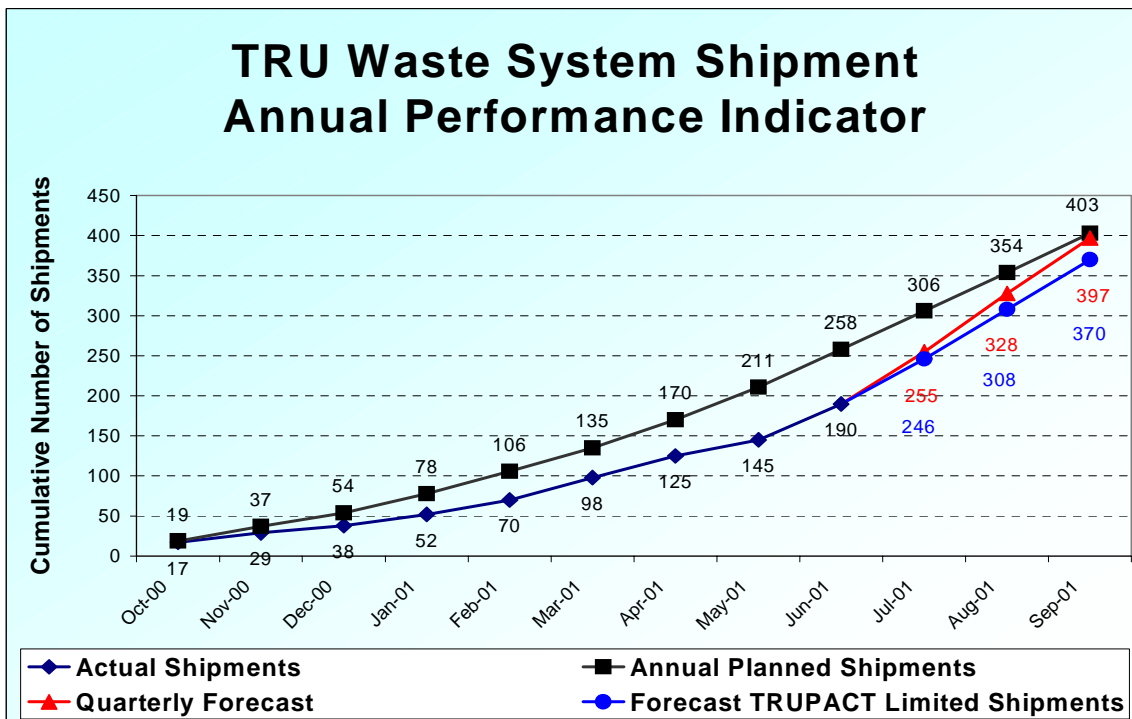
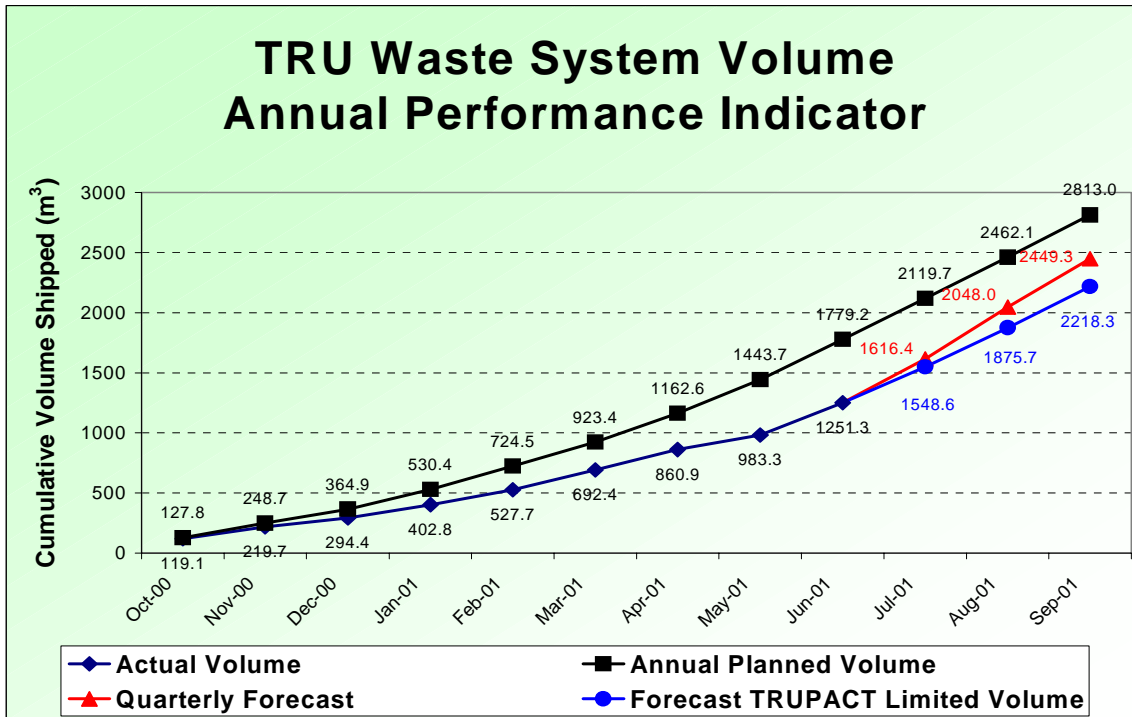
- TRU Waste System Shipment Performance Indicator - the actual number of shipments versus the planned number of shipments during FY01. The next quarter forecast is shown in red. Estimates of restrictions due to TRUPACT-II availability are shown in blue.

Analysis

During the current Fiscal Year, the cumulative number of shipments received as of June 30, 2001, was approximately 74% of the initially planned values expected to be shipped by this time based on the NTWMP. By volume, 70% of the planned volume of TRU waste was received. The less than anticipated values are due to the lack of characterized and certified TRU waste inventory for shipment, limitations in the number of containers and TRUPACT-IIs per shipment due to container weight restrictions (e.g., two TRUPACTs per shipment for INEEL due to the shipment of heavier sludge drums), delays in the approval of site certification audit documentation, certification process errors and the need for the associated EPA inspection, site mechanical difficulties, and weather delays.

Based on the current forecasts from the sites, total FY01 receipts are estimated to be 99% of the originally planned number of shipments in the NTWMP. TRU waste volumes disposed will be 87% of the originally planned TRU waste disposal volumes in the NTWMP. However, projected TRUPACT-II availability could restrict these values to 92% and 79%, respectively.

With only a difference of 6 shipments, the current shipping rate forecasts are consistent with the cumulative number of shipments projected in the NTWMP; however, shipments during the remainder of FY01 could be limited to less than the current forecast based on TRUPACT-II availability. To achieve the cumulative volume projected in the NTWMP, the average volume per shipment during the last three months of FY01 would need to increase to 7.5 m³, an average volume increase of about 40% over the estimated number of shipments based on TRUPACT-II restrictions. Transportation resources and waste inventories do not currently support these shipping rate and volume increases.



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Technical and Programmatic Issues

Since the issuance of the National TRU Waste Management Plan, several of the areas identified under Section 2.3, *Integrated Program Strategy*, have continued to make progress toward their goals and end-state. The areas of progress since the last NTWMP Quarterly Summary are noted in the following sections.

2.3.1.9 Mode of Waste Transport

An evaluation report on the viability of TRU waste shipments to WIPP by rail was issued in April 2001. The report concluded that rail was a viable option for shipments to WIPP.

2.3.1.10 Non-Standard TRU Waste Containers

Building upon the results of the "TRUPACT-III Workshop" held on February 13-14, 2001, at the DOE-CBFO, a second workshop has been planned for July 17-18, 2001, to select a more specific design for the proposed TRUPACT-III option. Specific issues to be addressed include the estimated amount of waste in oversize or odd-sized packages which may be shipped in the proposed packagings, the anticipated difficulty with licensing, possible difficulties with construction, and scheduling issues.

2.3.1.17 Improving Operations and Long-Term Safety of WIPP

The National Research Council, organized by the National Academy of Sciences to provide services to the federal government, convened a committee of experts to advise the DOE on the operation of WIPP. The committee was asked to provide recommendations on two issues: (1) a research agenda to enhance confidence in the long-term performance of WIPP; and (2) increasing the throughput, efficiency, and cost-benefit without compromising safety in characterizing, certifying, packaging, and shipping waste to WIPP.

In its interim report, the committee provided the DOE with recommendations on several issues that the committee believed merited immediate consideration and action. In developing their report, the committee was guided by the principle of "reasonableness" with respect to risks, costs, and

the ALARA (as low as reasonably achievable) principle.

In June, the National Research Council issued its final report, *Improving Operations and Long-Term Safety of the Waste Isolation Pilot Plant*. The specific findings and recommendations were grouped into three categories (1) site performance, (2) site characterization, and (3) the National TRU Program.

Under site performance, the committee recommended taking advantage of the long (35 to possibly 100 years) pre-closure operating period to monitor selected performance indicators. The indicators identified were:

- a) brine migration,
- b) gas pressure generation,
- c) magnesium oxide backfill, and
- d) deformation of rock salt and interaction of salt with TRU waste containers.

In site characterization, the committee identified four areas in which additional site characterization or monitoring were recommended. The program areas are:

- a) hydrologic characterization of the Culbren,
- b) detection of deep brine reservoirs below the waste repository horizon,
- c) monitoring of oil, gas, and mineral production in the area, and
- d) the establishment of a baseline for naturally occurring radioactive materials in subsurface brines and hydrocarbons in the vicinity of the site.

Under the National TRU Program, the committee raised two issues:

- a) the cost and safety of current waste characterization and packaging requirements, and
- b) the impact of the total inventory of organic materials in the repository.

For National TRU Program issues, the CBFO generally concurred with the National Research Council recommendations in the interim and final

reports. Upon issuance of the NRC interim report, the CBFO had initiated review of activities in the areas of transportation and packaging. This review led to the development of the Optimization Plan (described in the next section) and certain permit modifications which will eliminate characterization and packaging requirements that lack a legal or safety basis.

The CBFO also agreed that it was prudent to conduct an analysis of the relative amounts of organic material in the repository, that material being "added" to the repository as part of the emplacement operations, and the impact of this "added" organic material. If the impact assessment indicates that the added organic material has a significant effect on predicted repository performance, then CBFO will further investigate the development of an inventory record system for organic material in the repository.

Optimization

The National TRU Waste System Optimization Project was initiated by the Department of Energy's Carlsbad Field Office and chartered to transition the DOE TRU Waste System from the baseline to a state of optimized efficiency. The Optimization Plan is in development by the Carlsbad Field Office.

